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Medication overuse headache: strategies for prevention and treatment using a multidisciplinary approach

Mieke van Driel *, Esther Anderson, Treasure McGuire, Richard Stark

ABSTRACT

Medication overuse headache, which affects patients who have migraines and frequent headaches, is prevalent worldwide and can severely impact daily functioning. Medication overuse headache is often not recognised by primary care physicians or general practitioners, as patients may overuse medications that are freely available without a prescription. Overuse of codeine-containing analgesics is particularly problematic and contributes to ongoing morbidity and opioid-related mortality. This article aims to provide an overview of the detection, prevention, and management of medication overuse headache. The definition of medication overuse headache and the risk levels of commonly used symptomatic headache medications are presented. An algorithm consisting of a number of simple questions can assist general practitioners with identifying at-risk patients. Treatment strategies are discussed in the context of a multidisciplinary approach.

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The estimated prevalence of medication overuse headache (MOH) in the general population ranges from 0.6% to 7%.^{1–8} A number of acute headache treatments may cause MOH,⁷ and the medications that are predominantly associated with MOH vary from country to country.^{1,7,9,10} Opioids such as codeine are particularly problematic, as they are consistently associated with increasingly severe headaches¹¹ (Table¹²) and poor outcomes after withdrawal.¹³ In a number of regions, including Hong Kong and Japan, codeine-containing medication is only available by prescription.¹⁴ In Australia, beginning in 2018, codeine (and its combinations with simple analgesics) will only be available by prescription, following a 2015 decision by the Australian Therapeutic Goods Administration (TGA).¹⁵ This policy change is

supported by evidence demonstrating an increase in unintentional codeine-related deaths in Australia.¹⁶

A systematic analysis of the global, regional, and national burden of neurological disorders from 1990 to 2015 (using data from the Global Burden of Disease Study 2015) found that neurological disorders were the leading cause of disability-adjusted life years (DALYs) in 2015, with the most prevalent neurological disorders being tension-type headache (1505.9 million DALYs), migraine (958.8 million DALYs), and MOH (58.5 million DALYs).¹⁷ As large numbers of people are potentially at risk of MOH, including anyone with frequent primary episodic headaches, strategies for primary prevention, treatment, and prevention of relapse may have substantial public health benefits.

TABLE. Risk of MOH from symptomatic headache medications¹²

High risk	Moderate	Low	Negligible
<ul style="list-style-type: none"> • Opioids (eg, codeine-containing medications) • Caffeine • Ergotamine 	<ul style="list-style-type: none"> • Triptans • Tramadol 	<ul style="list-style-type: none"> • Simple analgesics (eg, aspirin, paracetamol) • Short-acting NSAIDs 	<ul style="list-style-type: none"> • Long-acting NSAIDs • Dihydroergotamine mesylate

Abbreviations: MOH = medication overuse headache; NSAIDs = nonsteroidal anti-inflammatory drugs

過度使用藥物性頭痛：多學科預防及治療策略

Mieke van Driel、Esther Anderson、Treasure McGuire、
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過度使用藥物性頭痛是常見疾病，對偏頭痛及經常頭痛的患者造成影響，甚至會嚴重影響日常功能。由於患者有可能過度使用未經處方且容易於藥房購買的藥物，初級保健醫生或全科醫生通常無法識別過度使用藥物性頭痛患者。過度使用含可卡因的鎮痛藥尤見嚴重，它可導致患者持續發病和與鴉片類藥物相關的死亡。本文旨在概述過度使用藥物性頭痛的檢測、預防和治療，並介紹過度使用藥物性頭痛的定義和常用症狀性頭痛藥物的風險水平。由一連串簡單問題組成的算法有助全科醫生識別風險患者。本文也在多學科方法的背景下討論治療策略。

Definition of medication overuse headache

The definition of MOH is headache occurring on ≥ 15 days per month as a consequence of regular overuse of acute or symptomatic headache medication (≥ 10 days per month for triptans, ergotamines, or opioids; ≥ 15 days per month for simple or combined analgesics) for more than 3 months. It usually, but not invariably, resolves after the overuse is stopped.¹⁸

Problems with detection and treatment of medication overuse headache

Patients' lack of awareness of medication overuse as a cause of headaches, reluctance to acknowledge how much medication they take, and poor adherence to recommended treatment have been identified as barriers to detection and management of MOH. A survey of Australian general practitioners (GPs)¹⁹ showed that GPs' awareness of MOH is low, although the awareness of codeine overuse in general may have increased following the TGA's decision, which was widely discussed in the media. In Singapore, a general practice survey of patients and their attending physicians in a primary care setting found that 22.6% of the patient population reported taking acute pain medication for headaches at least 4 days per week. However, the physicians only identified this in 5.3% of the study population, indicating that physicians did not recognise a large percentage of patients at risk of MOH.²⁰ Khu et al²⁰ commented that overuse of analgesic medications may lead to 'doctor-hopping' by patients in search of increasingly elusive headache relief. There may be a need to provide greater awareness of MOH during medical training, as a survey of final year medical students in Singapore found that 47% were unfamiliar with MOH as a disease entity, and 96%

were unfamiliar with local clinical practice guidelines about headaches.²¹

Patients with frequent episodic migraines (headaches on 8-15 days per month) or chronic migraines (headaches on >15 days per month) are at particular risk of developing MOH. General practitioners play a crucial role in identifying these patients, assessing their medication intake, and offering strategies to minimise the risk of MOH (Box 1^{4,22}).

Patients may be reluctant to reveal how many analgesics they take or may be unaware or unwilling to accept that the medication they use to treat their headaches is actually contributing to the continuation of their headaches. They may also be reluctant to discontinue medication that they have found to provide some relief for their headaches in the past. Patients who are anxious about their headaches interfering with essential activities, such as work, may use medication routinely as a preventive measure. In addition, a common misperception among consumers is that medication that can be purchased without a prescription ('over the counter') is harmless.²³ Unfortunately, once established, MOH (particularly that caused by opioids) has a high relapse rate after treatment.²⁴ Adherence to recommended treatment is generally suboptimal in patients with MOH, but the majority of relapses occur in the first year after withdrawal.²⁵ It is therefore important to educate patients about the pathophysiology and treatment of MOH and to continue supporting them beyond the immediate period of withdrawal.

Some patients who report "excessive" medication use and very frequent headache do not respond to medication withdrawal. Patients who develop MOH are usually those with intrinsically high-frequency headaches, and withdrawal tends to lead to reversion to their natural background headache pattern, which may range from infrequent episodic migraines to higher-frequency patterns. Scher et al²⁶ questioned the benefit of withdrawal or restriction of medication on the grounds that the patient may not benefit from it. However, withdrawal allows the underlying headache pattern to be determined and a reappraisal of headache control to be conducted. Study results have demonstrated that withdrawal of headache medication benefits many patients with MOH. For example, in a recent study, patients diagnosed with MOH were randomised to 2 months' detoxification with either complete withdrawal of medication or acute medication restricted to 2 days/week. The number of migraine-days/month was significantly reduced after 6 months with both treatments, with a greater reduction of migraine-days/month in the complete withdrawal group, indicating that complete withdrawal is generally more effective than medication restriction

BOX 1. Practical strategies for avoiding MOH

1. Recognising migraine

Use the three-question ID Migraine tool as a useful screener.²² If the answer to two or three of the questions below is “yes”, the diagnosis is very likely to be migraine:

- (i) In the past 3 months, has a headache interfered with your activities on at least one day?
- (ii) When you have a headache, do you feel nauseated (sick)?
- (iii) When you have a headache, does light bother you?

Once a diagnosis of migraine is suspected, count headache days and medication days and employ strategies to minimise the risk of MOH.

Counting headache days

“How many days per month do you have a headache?”, or better,

“How many days per month do you have no headache at all?”

Counting medication days

“How many days per month do you take medication for headaches?”, or

“How many days per month do you take no medication for headaches at all?”

2. Minimising the risk of MOH in patients with frequent migraines:

- Introduce appropriate migraine prophylaxis⁴
- Use a staged approach to acute headache treatments:
 - o Use NSAIDs or simple analgesics for mild headaches
 - o Use triptans for more severe headaches (but not >10 days per month)
 - o Avoid codeine-containing medications

Abbreviations: MOH = medication overuse headache; NSAIDs = nonsteroidal anti-inflammatory drugs

and that medication overuse was a major factor in the patients’ headache pathology.²⁷

A multidisciplinary approach

As patients with MOH often do not present to their GPs in response to the first instance, pharmacists can play a role in educating patients who self-medicate with analgesics when analgesics are purchased without a prescription.²⁸ They could encourage patients who may be overusing pain relief medication to consult their GPs to discuss other treatment options. However, it may not be easy to identify at-risk patients, as some obtain large quantities of headache medications by shopping at different pharmacies. Identification of these patients could be facilitated by using a tracking system to detect patients who buy headache medication at multiple pharmacies.

Conditions associated with self-medication, such as MOH, could be prevented by community pharmacists. Community pharmacists have overviews of both prescriptions and non-prescription medications that patients are taking (provided that patients are not visiting several different pharmacies) and are easily accessible to patients.^{29,30} Thus, the sale of headache medications is an opportunity to discuss their potential adverse effects and their role in MOH. A survey in Japan on the role of community pharmacists in self-medication of patients with headache found that 32% of the surveyed doctors were concerned about the increase of patients who

overuse headache medication. Both doctors and pharmacists thought that pharmacists should not only provide patients with “instruction on the use of drugs” but also suggest “when to consult a hospital or clinic”.³¹ However, strategies may need to be devised to motivate patients to do this, as another Japanese survey of pharmacists and doctors found that 22% of pharmacists had experienced refusal by patients with headache to consult a clinic, despite the pharmacist’s recommendation.³²

Community pharmacists have an important role in supporting patients with headache. This can be fostered by all key stakeholders—pharmacists, doctors, and patients—being provided with multidisciplinary opportunities to improve their MOH health literacy and to maintain an open and collaborative relationship.

Although MOH often develops outside of GPs’ immediate view through patients’ self-medication, GPs are important in its prevention, detection, and treatment. The first step is educating patients, and when they do not understand the cause of and treatment for MOH, taking time to inform them and clarify their misunderstandings.²⁹ The next step is to develop a plan with the patient and provide clear and continuing support for what is often a challenging journey. General practitioners also need to be aware of situations in which patients should be referred to a neurologist, preferably one who specialises in headache management.

Discussions between GPs or pharmacists and patients who overuse headache medication are often

delicate. The patient may perceive an accusation of ‘recreational use’ of (particularly codeine-containing) drugs. It is vital for productive communication that the health care professional clarify that there is no suspicion of this type and that the medications are recognised as being used to deal with genuinely troublesome symptoms. It is vital to subsequently emphasise that ongoing use of particular headache medications may contribute to perpetuation of headaches and that better strategies are available.

Management and prevention strategies

Prevention of headaches is better than curing them. Pharmacists and GPs who are aware of MOH can detect patients with increasing frequencies of headaches and medication use. Strategies to assist such patients before they progress into frank MOH include lifestyle adjustments and appropriate prophylaxis, as discussed below as part of MOH treatment (Box 2).

Complete withdrawal from overused headache medications is a key component of the management strategy, along with education, counselling, and support. Abrupt withdrawal is usually preferred, but tapered withdrawal may be more appropriate when codeine is implicated.²⁵ Coexisting psychiatric conditions should also be assessed and managed. As medication discontinuation results in withdrawal headaches—often associated with nausea, vomiting, and sleep disturbance—patients frequently need assistance coping with withdrawal symptoms and persevering with discontinuation.^{4,12,33,34} Symptoms usually last between 2 and 10 days, with withdrawal

from triptans lasting approximately 4 days and that from nonsteroidal anti-inflammatory drugs lasting about 10 days. Withdrawal can be managed through primary care; however, opioid discontinuation may require hospitalisation.^{34,35}

Accurate diagnosis based on the third edition of the International Classification of Headache Disorders¹⁷ and referral of complex cases to a neurologist/headache specialist is recommended for individualised treatments. Psychiatric assessment may also be indicated in some cases. However, in many countries, limited specialist availability means that referrals need to be selective. Psychologists and physical therapists have a role, as psychotherapy, relaxation techniques, physical exercise, and cognitive behaviour therapy may be useful adjuncts to supervised pharmacotherapy.^{4,12,23,28,34,36,37} The combination of behavioural treatment and prophylactic medication may significantly reduce the risk of relapse.³⁷ Preventive medications for chronic migraines include antiepileptic drugs (particularly topiramate), antidepressants (eg, amitriptyline), onabotulinum toxin A, and drugs used for episodic migraines (eg, beta blockers). For example, topiramate (oral) and onabotulinum toxin A (by local injection) are recommended by the Taiwan Headache Society 2017 medical treatment guidelines as first-line treatments for prophylaxis of chronic migraines.³⁸ Education about acute and prophylactic treatment may improve adherence to both pharmacological and non-pharmacological therapies.²⁸

In some circumstances, withdrawal may require hospital admission. Patients with MOH who have been detoxified as in-patients should be followed up by their GPs. Support by a headache nurse (available in some neurological practices) can improve adherence to detoxification.³⁹

Multidisciplinary treatment of patients with MOH, including pharmacological prophylaxis, relaxation therapy, and aerobic sports, is associated with reduction in headaches, as long as patients adhere to the recommended therapies.²⁸ Motivational telephone interviewing may also help to promote adherence.⁴⁰ To supplement regular GP support, practice nurses could be involved in patient support, and they could liaise with pharmacists to monitor medication use.

Conclusion

There is an urgent need for increased awareness of MOH among both patients and health care professionals.⁴¹ Medication overuse headache causes considerable morbidity but is preventable. Headache frequency (and the associated disability, depression, and anxiety) can be considerably reduced in patients with MOH through withdrawal from the overused medication and appropriate supportive treatment.

BOX 2. Treatment strategies for patients with MOH (abrupt withdrawal with immediate initiation of prophylactic medication)

1. Introduce appropriate migraine prophylaxis
 - Topiramate
 - Antidepressants (eg, amitriptyline)
 - Onabotulinum toxin A
 - Drugs used for episodic migraines (eg, beta blockers)
2. Provide education on MOH and expected withdrawal symptoms
3. Use a staged approach to acute headache treatments
 - Use NSAIDs or simple analgesics for mild headaches
 - Use triptans for more severe headaches (but not >10 days per month)
 - Avoid using codeine!
4. Use a multidisciplinary team
 - Counselling
 - Physiotherapy
5. Monitor progress by:
 - counting headache days (please refer to Box 1)
 - counting medication days (please refer to Box 1)
6. Offer regular follow-up and support through GPs or headache nurses
7. Collaborate with local community pharmacies where feasible

Abbreviations: GPs = general practitioners; MOH = medication overuse headache; NSAIDs = nonsteroidal anti-inflammatory drugs

A multidisciplinary approach involving primary care physicians (GPs), community pharmacists, nurses, and allied health providers,³⁶ with referral to neurologists/headache specialists (where available) for complex cases, is recommended.

Author contributions

All authors contributed to the concept of the paper, acquisition and interpretation of data and critical revision of the manuscript for important intellectual content. EA and MVD drafted the article. All authors approved the final version.

Declaration

M van Driel, T McGuire, and R Stark have received consulting fees from In Vivo Academy Ltd for development of education materials for a multidisciplinary programme about MOH. In Vivo Academy Ltd received an unrestricted educational grant from Pfizer to develop educational material about MOH. R Stark has also received lecture and/or consulting fees from Allergan, Novartis, TEVA, MSD, Abbvie and SciGen (Australia) and from In Vivo Academy Ltd relating to a Pfizer-sponsored project, and has undertaken clinical trials for Allergan. E Anderson is an employee of In Vivo Academy Ltd.

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